

ABSTRACT OF THE DISCLOSURE

The invention provides an electrolyte membrane that allows an operating temperature of a solid polymer membrane fuel cell to be raised and an operating temperature of a solid oxide fuel cell to be lowered. This electrolyte membrane can be used in a fuel cell that is operable in an intermediate temperature range. The invention also provides a fuel cell using such an electrolyte membrane. The electrolyte membrane has a hydrated electrolyte layer, and dense layers made of a hydrogen permeable material that are formed on both sides of this electrolyte layer. Both sides of the electrolyte membrane are coated with dense layers. Consequently, evaporation of moisture contained in the electrolyte layer is suppressed, and increase in the resistance of the membrane is inhibited. As a result, the range of the operating temperature of the fuel cell can be enlarged.